

AMENDMENTS TO THE CLAIMS

Claims 1-20 (Canceled)

Claim 21 (New) A method for detecting chlorinated ethylene-decomposing bacteria in a sample, comprising:

(a) performing PCR (polymerase chain reaction) using

(i) a primer having a nucleic acid sequence selected from the group consisting of any one of SEQ ID NO:2 through SEQ ID NO:7; and a nucleic acid completely complementary to the nucleic acid sequence selected from the group consisting of any one of SEQ ID NO:2 through SEQ ID NO:7; and

(ii) a nucleic acid in the sample as a template; and

(b) detecting a synthesized DNA fragment.

Claim 22 (New) A method for detecting chlorinated ethylene-decomposing bacteria in a sample, comprising:

(a) providing a probe comprising a nucleic acid that preferentially hybridizes to at least one of the 16S rRNA or 16S rDNA of chlorinated ethylene-decomposing bacteria and has a base sequence selected from the group consisting of

(i) a sequence of any one of SEQ ID N0:2 through SEQ ID NO:7 ;

and

(ii) a sequence completely complementary to the sequence of any one of SEQ ID NO:2 through SEQ ID NO:7

- (b) labeling the probe with a label selected from the group consisting of: a radioactive element, an enzyme, a fluorescent substance, an antigen, an antibody, a chemical substance, and combinations thereof;
- (c) contacting a material with the labeled probe to perform RNA or DNA hybridization; and
- (d) detecting chlorinated ethylene-decomposing bacteria using the label as an indicator.

Claim 23 (New) A method for detecting chlorinated ethylene-decomposing bacteria in a sample, comprising:

- (a) performing PCR (polymerase chain reaction) using
 - (i) a primer having a nucleic acid sequence selected from the group consisting of a sequence of at least 10 individual nucleic acids in succession found in any one of SEQ ID NO:2 through SEQ ID NO:7; and
 - a nucleic acid completely complementary to the nucleic acid sequence selected from the group consisting of a sequence of at least 10 individual nucleic acids in succession found in any one of SEQ ID NO:2 through SEQ ID NO:7; and
 - (ii) a nucleic acid in the sample as a template; and
- (b) detecting a synthesized DNA fragment.

Claim 24 (New) A method for detecting chlorinated ethylene-decomposing bacteria with a labeled probe, comprising:

- (a) labeling a probe wherein the probe comprises a nucleic acid sequence selected from the group consisting of a sequence of at least 10 individual

nucleic acids in succession found in any one of SEQ ID NO:2 through SEQ ID NO:7; and

a nucleic acid completely complementary to the nucleic acid sequence selected from the group consisting of a sequence of at least 10 individual nucleic acids in succession found in any one of SEQ ID NO:2 through SEQ ID NO:7 and wherein a label is selected from the group consisting of: a radioactive element, an enzyme, a fluorescent substance, an antigen, an antibody, a chemical substance, and combinations thereof;

(b) contacting a sample or a nucleic acid prepared from the sample with the labeled probe to perform RNA or DNA hybridization; and

(c) detecting chlorinated ethylene-decomposing bacteria using the label as an indicator.